

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Corley N-08HM (slot I)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Site:</b>	Corley Pad	<b>MD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Well:</b>	Corley N-08HM (slot I)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Jul2216dt_v14

<b>Project</b>	Marshall County, West Virginia		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD83 West Virginia - HARN		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Corley Pad				
<b>Site Position:</b>		<b>Northing:</b>	14,436,832.02 usft	<b>Latitude:</b>	39.75286638
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,706,973.98 usft	<b>Longitude:</b>	-80.76319015
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.15 °

<b>Well</b>	Corley N-08HM (slot I)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	14,436,870.34 usft	<b>Latitude:</b>	39.75297147
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,706,994.74 usft	<b>Longitude:</b>	-80.76311595
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	1,254.00 usft

<b>Wellbore</b>	Sidetrack 01				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	8/12/2018	-8.68	66.84	52,029.49376477

<b>Design</b>	Surveys Sidetrack 01				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	7,426.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	335.08	

<b>Survey Program</b>	<b>Date</b>	8/22/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	RECEIVED Office of Oil and Gas  JUN 10 2020  WV Department of Environmental Protection
309.00	7,426.00	MWD (Original Hole)	MWD	MWD - Standard	
7,515.00	14,235.00	MWD ST1 (Sidetrack 01)	MWD	MWD - Standard	
14,283.00	14,283.00	Projection (Sidetrack 01)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
309.00	0.33	101.11	309.00	-0.17	0.87	-0.52	0.11	0.11	0.00	0.00
344.00	0.15	63.27	344.00	-0.17	1.01	-0.58	0.66	-0.51	-108.11	
437.00	0.41	157.92	437.00	-0.42	1.25	-0.91	0.48	0.28	101.77	
531.00	0.24	130.13	531.00	-0.86	1.52	-1.42	0.24	-0.18	-29.56	
623.00	0.19	354.66	623.00	-0.83	1.66	-1.46	0.43	-0.05	-147.25	
716.00	0.20	181.21	716.00	-0.84	1.64	-1.46	0.42	0.01	-186.51	
810.00	0.10	81.91	809.99	-1.00	1.72	-1.63	0.25	-0.11	-105.64	
903.00	0.19	183.83	902.99	-1.14	1.79	-1.79	0.25	0.10	109.59	

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<b>Site:</b>	Corley Pad	<b>MD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision=110)
<b>Well:</b>	Corley N-08HM (slot I)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Jul2216dt_v14

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
965.00	0.28	110.72	964.99	-1.29	1.92	-1.98	0.47	0.15	-117.92
992.00	0.29	132.12	991.99	-1.36	2.03	-2.09	0.39	0.04	79.26
1,082.00	0.67	160.46	1,081.99	-2.01	2.38	-2.83	0.49	0.42	31.49
1,171.00	1.04	164.66	1,170.98	-3.28	2.77	-4.14	0.42	0.42	4.72
1,261.00	0.28	178.00	1,260.97	-4.29	2.99	-5.15	0.86	-0.84	14.82
1,351.00	0.37	348.67	1,350.97	-4.22	2.94	-5.07	0.72	0.10	189.63
1,441.00	0.98	357.12	1,440.97	-3.17	2.85	-4.07	0.68	0.68	9.39
1,530.00	2.67	8.99	1,529.92	-0.36	3.13	-1.65	1.94	1.90	13.34
1,620.00	3.93	9.19	1,619.77	4.75	3.95	2.65	1.40	1.40	0.22
1,709.00	5.29	9.83	1,708.48	11.81	5.14	8.54	1.53	1.53	0.72
1,799.00	5.97	9.71	1,798.04	20.51	6.64	15.80	0.76	0.76	-0.13
1,889.00	7.07	8.94	1,887.46	30.59	8.29	24.25	1.23	1.22	-0.86
1,978.00	9.33	9.88	1,975.54	43.11	10.38	34.73	2.54	2.54	1.06
2,068.00	10.58	7.55	2,064.19	58.49	12.71	47.69	1.46	1.39	-2.59
2,158.00	12.14	7.42	2,152.42	76.07	15.02	62.66	1.73	1.73	-0.14
2,247.00	14.94	4.79	2,238.94	96.78	17.19	80.53	3.22	3.15	-2.96
2,337.00	15.04	1.10	2,325.88	120.02	18.38	101.11	1.07	0.11	-4.10
2,427.00	14.57	0.09	2,412.89	143.02	18.62	121.86	0.60	-0.52	-1.12
2,516.00	14.58	6.02	2,499.03	165.35	19.82	141.61	1.68	0.01	6.66
2,589.00	14.58	3.94	2,569.68	183.66	21.41	157.54	0.72	0.00	-2.85
2,687.00	12.70	0.24	2,664.92	206.74	22.30	178.10	2.11	-1.92	-3.78
2,776.00	13.72	7.97	2,751.57	226.97	23.81	195.82	2.29	1.15	8.69
2,866.00	16.43	13.49	2,838.47	249.93	28.26	214.76	3.40	3.01	6.13
2,955.00	15.89	10.02	2,923.95	274.16	33.31	234.61	1.24	-0.61	-3.90
3,045.00	16.49	13.38	3,010.38	298.72	38.41	254.74	1.24	0.67	3.73
3,134.00	16.07	13.11	3,095.81	323.01	44.13	274.35	0.48	-0.47	-0.30
3,224.00	17.09	11.29	3,182.07	348.11	49.55	294.84	1.27	1.13	-2.02
3,314.00	16.83	9.75	3,268.16	373.92	54.34	316.23	0.58	-0.29	-1.71
3,404.00	16.23	6.40	3,354.44	399.26	57.95	337.69	1.25	-0.67	-3.72
3,493.00	16.06	12.08	3,439.94	423.66	61.91	358.15	1.78	-0.19	6.38
3,583.00	17.11	14.93	3,526.19	448.63	67.93	378.25	1.48	1.17	3.17
3,673.00	16.71	13.49	3,612.30	474.00	74.36	398.56	0.64	-0.44	-1.60
3,763.00	15.92	13.17	3,698.68	498.60	80.19	418.41	0.88	-0.88	-0.36
3,852.00	16.31	15.53	3,784.18	522.53	86.32	437.53	0.86	0.44	2.65
3,942.00	16.04	15.21	3,870.62	546.70	92.96	456.66	0.32	-0.30	-0.36
4,032.00	17.03	15.65	3,956.89	571.39	99.78	476.18	1.11	1.10	0.49
4,121.00	17.01	13.75	4,042.00	596.59	106.39	496.24	0.63	-0.02	-2.13
4,211.00	16.36	12.85	4,128.21	621.73	112.34	516.54	0.78	-0.72	-1.00
4,301.00	18.21	12.06	4,214.14	647.84	118.10	537.80	2.07	2.06	-0.88
4,391.00	19.11	9.45	4,299.41	676.13	123.45	561.19	1.36	1.00	-2.90
4,480.00	18.79	7.36	4,383.59	704.72	127.68	585.34	0.84	-0.36	-2.35
4,570.00	18.51	5.95	4,468.86	733.30	131.02	609.86	0.59	-0.31	-1.57
4,660.00	18.49	3.85	4,554.21	761.75	133.46	634.63	0.74	-0.02	-2.33



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<b>Site:</b>	Corley Pad	<b>MD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
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<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Jul2216dt_v14

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Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,749.00	17.40	0.62	4,638.88	789.14	134.55	659.01	1.66	-1.22	-3.63
4,839.00	16.58	358.19	4,724.95	815.43	134.29	682.96	1.21	-0.91	-2.70
4,929.00	16.73	358.03	4,811.18	841.21	133.44	706.70	0.17	0.17	-0.18
5,018.00	15.40	359.82	4,896.70	865.83	132.96	729.23	1.59	-1.49	2.01
5,108.00	14.95	4.59	4,983.57	889.35	133.85	750.19	1.47	-0.50	5.30
5,198.00	15.92	3.24	5,070.32	913.25	135.48	771.18	1.15	1.08	-1.50
5,288.00	15.55	3.89	5,156.95	937.61	136.99	792.63	0.46	-0.41	0.72
5,377.00	13.36	8.89	5,243.13	959.67	139.39	811.63	2.83	-2.46	5.62
5,467.00	13.65	7.56	5,330.64	980.47	142.40	829.23	0.47	0.32	-1.48
5,557.00	13.04	13.40	5,418.21	1,000.88	146.15	846.16	1.64	-0.68	6.49
5,647.00	13.35	14.19	5,505.84	1,020.83	151.05	862.18	0.40	0.34	0.88
5,736.00	15.11	14.79	5,592.10	1,042.01	156.53	879.08	1.98	1.98	0.67
5,826.00	17.64	13.55	5,678.44	1,066.61	162.72	898.79	2.84	2.81	-1.38
5,916.00	20.17	10.01	5,763.59	1,095.15	168.61	922.19	3.09	2.81	-3.93
6,005.00	22.34	4.48	5,846.53	1,127.14	172.60	949.52	3.32	2.44	-6.21
6,087.00	22.97	4.20	5,922.21	1,158.63	174.99	977.07	0.78	0.77	-0.34
6,172.00	24.26	1.66	6,000.09	1,192.63	176.71	1,007.18	1.93	1.52	-2.99
6,261.00	29.54	354.98	6,079.45	1,232.80	175.32	1,044.20	6.83	5.93	-7.51
6,351.00	35.30	349.27	6,155.41	1,280.50	168.53	1,090.32	7.24	6.40	-6.34
6,441.00	41.63	342.67	6,225.87	1,334.66	154.76	1,145.24	8.37	7.03	-7.33
6,530.00	45.41	336.08	6,290.43	1,391.90	133.09	1,206.29	6.63	4.25	-7.40
6,620.00	47.96	330.11	6,352.20	1,450.21	103.42	1,271.66	5.59	2.83	-6.63
6,709.00	52.09	328.17	6,409.37	1,508.72	68.42	1,339.48	4.93	4.64	-2.18
6,799.00	59.03	325.80	6,460.24	1,570.88	27.95	1,412.90	8.01	7.71	-2.63
6,889.00	62.86	325.62	6,503.94	1,635.87	-16.36	1,490.51	4.26	4.26	-0.20
6,978.00	65.89	325.71	6,542.42	1,702.12	-61.62	1,569.66	3.41	3.40	0.10
7,068.00	72.97	328.35	6,574.03	1,772.79	-107.40	1,653.04	8.33	7.87	2.93
7,158.00	76.18	328.52	6,597.97	1,846.70	-152.81	1,739.20	3.57	3.57	0.19
7,248.00	82.02	329.58	6,614.98	1,922.46	-198.24	1,827.05	6.59	6.49	1.18
7,337.00	90.90	331.16	6,620.47	1,999.60	-242.10	1,915.49	10.13	9.98	1.78
7,426.00	94.90	330.02	6,615.97	2,077.02	-285.74	2,004.08	4.67	4.49	-1.28
<b>Tie into original hole @ 7426 MD</b>									
7,515.00	89.67	336.17	6,612.41	2,156.26	-325.94	2,092.88	9.06	-5.88	6.91
7,605.00	89.63	338.10	6,612.96	2,239.18	-360.91	2,182.82	2.14	-0.04	2.14
7,694.00	91.12	335.20	6,612.38	2,320.88	-396.18	2,271.77	3.66	1.67	-3.26
7,784.00	90.46	332.48	6,611.14	2,401.64	-435.85	2,361.73	3.11	-0.73	-3.02
7,873.00	90.33	329.05	6,610.53	2,479.29	-479.31	2,450.47	3.86	-0.15	-3.85
7,963.00	90.95	329.40	6,609.52	2,556.61	-525.35	2,539.99	0.79	0.69	0.39
8,052.00	90.86	329.93	6,608.12	2,633.42	-570.30	2,628.58	0.60	-0.10	0.60
8,142.00	89.27	329.05	6,608.01	2,710.95	-615.99	2,718.15	2.02	-1.77	-0.98
8,232.00	88.62	328.17	6,609.67	2,787.77	-662.86	2,807.56	1.22	-0.72	-0.98
8,321.00	89.27	328.44	6,611.31	2,863.48	-709.61	2,895.92	0.79	0.73	0.30
8,411.00	87.69	328.88	6,613.70	2,940.32	-756.40	2,985.32	1.82	-1.76	0.49
8,500.00	88.88	328.52	6,616.36	3,016.33	-802.62	3,073.73	1.40	1.34	-0.40

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**Site:** Corley Pad  
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**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Corley N-08HM (slot I)  
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8,590.00	89.71	328.52	6,617.47	3,093.08	-849.61	3,163.13	0.92	0.92	0.00
8,680.00	91.03	328.88	6,616.89	3,169.98	-896.37	3,252.57	1.52	1.47	0.40
8,769.00	91.69	330.46	6,614.77	3,246.77	-941.30	3,341.14	1.92	0.74	1.78
8,859.00	90.37	331.16	6,613.16	3,325.33	-985.18	3,430.87	1.66	-1.47	0.78
8,948.00	90.90	331.42	6,612.17	3,403.38	-1,027.93	3,519.67	0.66	0.60	0.29
9,038.00	89.98	332.22	6,611.48	3,482.71	-1,070.43	3,609.52	1.35	-1.02	0.89
9,127.00	90.11	331.86	6,611.41	3,561.32	-1,112.16	3,698.40	0.43	0.15	-0.40
9,217.00	90.68	332.22	6,610.79	3,640.81	-1,154.36	3,788.27	0.75	0.63	0.40
9,307.00	89.36	331.25	6,610.76	3,720.08	-1,196.97	3,878.11	1.82	-1.47	-1.08
9,396.00	89.85	331.69	6,611.37	3,798.27	-1,239.48	3,966.93	0.74	0.55	0.49
9,486.00	90.59	331.69	6,611.03	3,877.50	-1,282.16	4,056.77	0.82	0.82	0.00
9,575.00	88.13	330.81	6,612.02	3,955.52	-1,324.96	4,145.56	2.94	-2.76	-0.99
9,665.00	88.84	329.40	6,614.40	4,033.52	-1,369.80	4,235.19	1.75	0.79	-1.57
9,754.00	89.41	329.23	6,615.76	4,110.04	-1,415.22	4,323.72	0.67	0.64	-0.19
9,844.00	90.42	330.11	6,615.89	4,187.72	-1,460.66	4,413.32	1.49	1.12	0.98
9,934.00	91.60	330.46	6,614.31	4,265.88	-1,505.27	4,502.99	1.37	1.31	0.39
10,023.00	90.68	328.00	6,612.53	4,342.33	-1,550.79	4,591.50	2.95	-1.03	-2.76
10,113.00	91.65	328.52	6,610.70	4,418.85	-1,598.12	4,680.84	1.22	1.08	0.58
10,203.00	90.46	328.08	6,609.05	4,495.41	-1,645.40	4,770.20	1.41	-1.32	-0.49
10,292.00	88.40	327.38	6,609.93	4,570.65	-1,692.92	4,858.45	2.44	-2.31	-0.79
10,382.00	88.88	327.65	6,612.07	4,646.55	-1,741.24	4,947.64	0.61	0.53	0.30
10,471.00	89.19	327.03	6,613.57	4,721.46	-1,789.26	5,035.82	0.78	0.35	-0.70
10,561.00	88.57	329.14	6,615.33	4,797.84	-1,836.83	5,125.13	2.44	-0.69	2.34
10,651.00	91.21	329.05	6,615.50	4,875.06	-1,883.05	5,214.63	2.94	2.93	-0.10
10,740.00	90.11	328.61	6,614.47	4,951.20	-1,929.11	5,303.09	1.33	-1.24	-0.49
10,830.00	90.99	330.28	6,613.61	5,028.70	-1,974.86	5,392.65	2.10	0.98	1.86
10,920.00	91.96	330.19	6,611.29	5,106.80	-2,019.53	5,482.29	1.08	1.08	-0.10
11,009.00	90.55	329.58	6,609.34	5,183.76	-2,064.17	5,570.90	1.73	-1.58	-0.69
11,099.00	90.29	331.51	6,608.68	5,262.12	-2,108.42	5,660.61	2.16	-0.29	2.14
11,188.00	89.98	333.09	6,608.48	5,340.92	-2,149.79	5,749.51	1.81	-0.35	1.78
11,278.00	90.07	333.01	6,608.44	5,421.15	-2,190.58	5,839.45	0.13	0.10	-0.09
11,368.00	91.38	333.62	6,607.30	5,501.55	-2,230.99	5,929.40	1.61	1.46	0.68
11,457.00	90.24	332.83	6,606.04	5,581.00	-2,271.08	6,018.34	1.56	-1.28	-0.89
11,547.00	90.33	330.63	6,605.59	5,660.26	-2,313.71	6,108.18	2.45	0.10	-2.44
11,637.00	88.53	328.88	6,606.49	5,738.00	-2,359.03	6,197.78	2.79	-2.00	-1.94
11,727.00	88.62	328.88	6,608.72	5,815.02	-2,405.53	6,287.22	0.10	0.10	0.00
11,816.00	90.42	328.44	6,609.47	5,891.03	-2,451.82	6,375.66	2.08	2.02	-0.49
11,906.00	90.68	328.00	6,608.61	5,967.53	-2,499.22	6,465.01	0.57	0.29	-0.49
11,996.00	91.43	328.26	6,606.95	6,043.95	-2,546.73	6,554.33	0.88	0.83	0.29
12,085.00	88.53	328.08	6,606.98	6,119.56	-2,593.66	6,642.67	3.26	-3.26	-0.20
12,175.00	88.70	328.17	6,609.16	6,195.97	-2,641.17	6,731.98	0.21	0.19	0.10
12,264.00	89.49	328.17	6,610.56	6,271.57	-2,688.11	6,820.32	0.89	0.89	0.00
12,354.00	88.66	331.16	6,612.01	6,349.23	-2,733.55	6,909.90	3.45	-0.92	3.32

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<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Corley N-08HM (slot I)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Site:</b>	Corley Pad	<b>MD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Well:</b>	Corley N-08HM (slot I)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Jul2216dt_v14

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Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,444.00	89.76	332.22	6,613.26	6,428.46	-2,776.23	6,999.73	1.70	1.22	1.18
12,533.00	91.91	331.60	6,611.96	6,506.96	-2,818.12	7,088.58	2.51	2.42	-0.70
12,623.00	92.79	331.42	6,608.27	6,585.99	-2,861.02	7,178.33	1.00	0.98	-0.20
12,712.00	91.87	328.70	6,604.65	6,663.04	-2,905.40	7,266.90	3.22	-1.03	-3.06
12,802.00	90.86	329.49	6,602.51	6,740.24	-2,951.61	7,356.38	1.42	-1.12	0.88
12,892.00	91.69	330.02	6,600.50	6,817.97	-2,996.93	7,445.97	1.09	0.92	0.59
12,981.00	89.45	327.38	6,599.62	6,894.00	-3,043.16	7,534.40	3.89	-2.52	-2.97
13,071.00	90.15	327.73	6,599.93	6,969.95	-3,091.44	7,623.62	0.87	0.78	0.39
13,161.00	91.08	328.08	6,598.97	7,046.19	-3,139.26	7,712.91	1.10	1.03	0.39
13,250.00	89.67	327.73	6,598.38	7,121.59	-3,186.54	7,801.21	1.63	-1.58	-0.39
13,340.00	90.20	328.17	6,598.49	7,197.87	-3,234.30	7,890.51	0.77	0.59	0.49
13,429.00	91.16	328.96	6,597.43	7,273.80	-3,280.71	7,978.93	1.40	1.08	0.89
13,519.00	90.02	328.61	6,596.50	7,350.76	-3,327.35	8,068.38	1.33	-1.27	-0.39
13,608.00	91.08	328.96	6,595.65	7,426.87	-3,373.47	8,156.84	1.25	1.19	0.39
13,698.00	89.19	327.91	6,595.44	7,503.55	-3,420.58	8,246.23	2.40	-2.10	-1.17
13,788.00	89.76	328.17	6,596.26	7,579.91	-3,468.22	8,335.54	0.70	0.63	0.29
13,877.00	89.85	328.17	6,596.56	7,655.52	-3,515.16	8,423.89	0.10	0.10	0.00
13,967.00	90.46	328.17	6,596.32	7,731.99	-3,562.63	8,513.24	0.68	0.68	0.00
14,056.00	91.03	327.91	6,595.16	7,807.49	-3,609.73	8,601.56	0.70	0.64	-0.29
14,146.00	91.74	328.00	6,592.99	7,883.76	-3,657.47	8,690.84	0.80	0.79	0.10
14,235.00	92.26	327.82	6,589.88	7,959.11	-3,704.72	8,779.09	0.62	0.58	-0.20
<b>Survey @ 14235.00 MD 6589.88 TVD</b>									
14,283.00	92.26	327.82	6,587.99	7,999.71	-3,730.27	8,826.66	0.00	0.00	0.00
<b>Survey projected to 14283.00 MD 6587.99 TVD</b>									

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Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,426.00	6,615.97	2,077.02	-285.74	Tie into original hole @ 7426 MD
14,235.00	6,589.88	7,959.11	-3,704.72	Survey @ 14235.00 MD 6589.88 TVD
14,283.00	6,587.99	7,999.71	-3,730.27	Survey projected to 14283.00 MD 6587.99 TVD

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Corley N-08HM (slot I)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Site:</b>	Corley Pad	<b>MD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Well:</b>	Corley N-08HM (slot I)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Jul2216dt_v14

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<b>Project</b>	Marshall County, West Virginia		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD83 West Virginia - HARN		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Corley Pad				
<b>Site Position:</b>		<b>Northing:</b>	14,436,832.02 usft	<b>Latitude:</b>	39.75286638
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,706,973.98 usft	<b>Longitude:</b>	-80.76319015
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.15 °

<b>Well</b>	Corley N-08HM (slot I)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	14,436,870.34 usft	<b>Latitude:</b>	39.75297147
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,706,994.74 usft	<b>Longitude:</b>	-80.76311595
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	1,254.00 usft

<b>Wellbore</b>	Sidetrack 01				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	8/12/2018	-8.68	66.84	52,029.49376477

<b>Design</b>	Surveys Sidetrack 01				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	7,426.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	335.08	

<b>Survey Program</b>	<b>Date</b>	8/22/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
309.00	7,426.00	MWD (Original Hole)	MWD	MWD - Standard	
7,515.00	14,235.00	MWD ST1 (Sidetrack 01)	MWD	MWD - Standard	
14,283.00	14,283.00	Projection (Sidetrack 01)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>	
0.00	0.00	0.00	0.00	0.00	0.00	14,436,870.34	1,706,994.74	39.75297147	-80.76311595	
309.00	0.33	101.11	309.00	-0.17	0.87	14,436,870.17	1,706,995.61	39.75297099	-80.76311285	
344.00	0.15	63.27	344.00	-0.17	1.01	14,436,870.17	1,706,995.75	39.75297100	-80.76311235	
437.00	0.41	157.92	437.00	-0.42	1.25	14,436,869.92	1,706,995.98	39.75297030	-80.76311152	
531.00	0.24	130.13	531.00	-0.86	1.52	14,436,869.48	1,706,996.26	39.75296909	-80.76311054	
623.00	0.19	354.66	623.00	-0.83	1.66	14,436,869.51	1,706,996.39	39.75296917	-80.76311006	
716.00	0.20	181.21	716.00	-0.84	1.64	14,436,869.50	1,706,996.38	39.75296914	-80.76311013	
810.00	0.10	81.91	809.99	-1.00	1.72	14,436,869.35	1,706,996.45	39.75296872	-80.76310985	
903.00	0.19	183.83	902.99	-1.14	1.79	14,436,869.20	1,706,996.52	39.75296833	-80.76310960	
965.00	0.28	110.72	964.99	-1.29	1.92	14,436,869.05	1,706,996.66	39.75296790	-80.76310913	



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Corley N-08HM (slot I)
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<b>Site:</b>	Corley Pad	<b>MD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Well:</b>	Corley N-08HM (slot I)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Jul2216dt_v14

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Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
992.00	0.29	132.12	991.99	-1.36	2.03	14,436,868.98	1,706,996.77	39.75296771	-80.76310873
1,082.00	0.67	160.46	1,081.99	-2.01	2.38	14,436,868.33	1,706,997.12	39.75296593	-80.76310751
1,171.00	1.04	164.66	1,170.98	-3.28	2.77	14,436,867.06	1,706,997.50	39.75296244	-80.76310614
1,261.00	0.28	178.00	1,260.97	-4.29	2.99	14,436,866.05	1,706,997.73	39.75295967	-80.76310535
1,351.00	0.37	348.67	1,350.97	-4.22	2.94	14,436,866.12	1,706,997.68	39.75295985	-80.76310553
1,441.00	0.98	357.12	1,440.97	-3.17	2.85	14,436,867.17	1,706,997.58	39.75296274	-80.76310586
1,530.00	2.67	8.99	1,529.92	-0.36	3.13	14,436,869.98	1,706,997.87	39.75297045	-80.76310481
1,620.00	3.93	9.19	1,619.77	4.75	3.95	14,436,875.09	1,706,998.69	39.75298450	-80.76310185
1,709.00	5.29	9.83	1,708.48	11.81	5.14	14,436,882.15	1,706,999.88	39.75300386	-80.76309756
1,799.00	5.97	9.71	1,798.04	20.51	6.64	14,436,890.85	1,707,001.37	39.75302774	-80.76309215
1,889.00	7.07	8.94	1,887.46	30.59	8.29	14,436,900.93	1,707,003.02	39.75305543	-80.76308618
1,978.00	9.33	9.88	1,975.54	43.11	10.38	14,436,913.45	1,707,005.11	39.75308980	-80.76307863
2,068.00	10.58	7.55	2,064.19	58.49	12.71	14,436,928.83	1,707,007.45	39.75313201	-80.76307017
2,158.00	12.14	7.42	2,152.42	76.07	15.02	14,436,946.41	1,707,009.76	39.75318026	-80.76306179
2,247.00	14.94	4.79	2,238.94	96.78	17.19	14,436,967.13	1,707,011.93	39.75323714	-80.76305388
2,337.00	15.04	1.10	2,325.88	120.02	18.38	14,436,990.36	1,707,013.12	39.75330095	-80.76304942
2,427.00	14.57	0.09	2,412.89	143.02	18.62	14,437,013.36	1,707,013.36	39.75336410	-80.76304834
2,516.00	14.58	6.02	2,499.03	165.35	19.82	14,437,035.69	1,707,014.55	39.75342543	-80.76304389
2,589.00	14.58	3.94	2,569.68	183.66	21.41	14,437,054.00	1,707,016.15	39.75347569	-80.76303804
2,687.00	12.70	0.24	2,664.92	206.74	22.30	14,437,077.08	1,707,017.04	39.75353907	-80.76303465
2,776.00	13.72	7.97	2,751.57	226.97	23.81	14,437,097.32	1,707,018.54	39.75359464	-80.76302911
2,866.00	16.43	13.49	2,838.47	249.93	28.26	14,437,120.27	1,707,022.99	39.75365764	-80.76301306
2,955.00	15.89	10.02	2,923.95	274.16	33.31	14,437,144.51	1,707,028.05	39.75372416	-80.76299484
3,045.00	16.49	13.38	3,010.38	298.72	38.41	14,437,169.07	1,707,033.15	39.75379158	-80.76297646
3,134.00	16.07	13.11	3,095.81	323.01	44.13	14,437,193.35	1,707,038.87	39.75385823	-80.76295589
3,224.00	17.09	11.29	3,182.07	348.11	49.55	14,437,218.45	1,707,044.28	39.75392712	-80.76293639
3,314.00	16.83	9.75	3,268.16	373.92	54.34	14,437,244.26	1,707,049.08	39.75399797	-80.76291909
3,404.00	16.23	6.40	3,354.44	399.26	57.95	14,437,269.60	1,707,052.69	39.75406754	-80.76290601
3,493.00	16.06	12.08	3,439.94	423.66	61.91	14,437,294.00	1,707,056.65	39.75413451	-80.76289168
3,583.00	17.11	14.93	3,526.19	448.63	67.93	14,437,318.97	1,707,062.67	39.75420304	-80.76287004
3,673.00	16.71	13.49	3,612.30	474.00	74.36	14,437,344.34	1,707,069.10	39.75427268	-80.76284692
3,763.00	15.92	13.17	3,698.68	498.60	80.19	14,437,368.94	1,707,074.93	39.75434019	-80.76282595
3,852.00	16.31	15.53	3,784.18	522.53	86.32	14,437,392.87	1,707,081.05	39.75440586	-80.76280392
3,942.00	16.04	15.21	3,870.62	546.70	92.96	14,437,417.04	1,707,087.70	39.75447220	-80.76278005
4,032.00	17.03	15.65	3,956.89	571.39	99.78	14,437,441.73	1,707,094.52	39.75453995	-80.76275556
4,121.00	17.01	13.75	4,042.00	596.59	106.39	14,437,466.93	1,707,101.13	39.75460910	-80.76273180
4,211.00	16.36	12.85	4,128.21	621.73	112.34	14,437,492.07	1,707,107.07	39.75467811	-80.76271040
4,301.00	18.21	12.06	4,214.14	647.84	118.10	14,437,518.19	1,707,112.83	39.75474978	-80.76268967
4,391.00	19.11	9.45	4,299.41	676.13	123.45	14,437,546.47	1,707,118.19	39.75482742	-80.76267034
4,480.00	18.79	7.36	4,383.59	704.72	127.68	14,437,575.06	1,707,122.42	39.75490590	-80.76265503
4,570.00	18.51	5.95	4,468.86	733.30	131.02	14,437,603.64	1,707,125.75	39.75498438	-80.76264288
4,660.00	18.49	3.85	4,554.21	761.75	133.46	14,437,632.09	1,707,128.19	39.75506249	-80.76263393
4,749.00	17.40	0.62	4,638.88	789.14	134.55	14,437,659.48	1,707,129.29	39.75513770	-80.76262979
4,839.00	16.58	358.19	4,724.95	815.43	134.29	14,437,685.77	1,707,129.03	39.75520990	-80.76263047
4,929.00	16.73	358.03	4,811.18	841.21	133.44	14,437,711.55	1,707,128.17	39.75528071	-80.76263325
5,018.00	15.40	359.82	4,896.70	865.83	132.96	14,437,736.17	1,707,127.70	39.75534833	-80.76263472
5,108.00	14.95	4.59	4,983.57	889.35	133.85	14,437,759.70	1,707,128.59	39.75541292	-80.76263133
5,198.00	15.92	3.24	5,070.32	913.25	135.48	14,437,783.59	1,707,130.22	39.75547853	-80.76262531
5,288.00	15.55	3.89	5,156.95	937.61	136.99	14,437,807.95	1,707,131.73	39.75554542	-80.76261969
5,377.00	13.36	8.89	5,243.13	959.67	139.39	14,437,830.02	1,707,134.13	39.75560600	-80.76261095
5,467.00	13.65	7.56	5,330.64	980.47	142.40	14,437,850.82	1,707,137.13	39.75566310	-80.76260006
5,557.00	13.04	13.40	5,418.21	1,000.88	146.15	14,437,871.22	1,707,140.88	39.75571911	-80.76258653
5,647.00	13.35	14.19	5,505.84	1,020.83	151.05	14,437,891.17	1,707,145.78	39.75577387	-80.76256890
5,736.00	15.11	14.79	5,592.10	1,042.01	156.53	14,437,912.35	1,707,151.27	39.75583199	-80.76254920
5,826.00	17.64	13.55	5,678.44	1,066.61	162.72	14,437,936.95	1,707,157.46	39.75589951	-80.76252694

WV Department of Environmental Protection



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Corley N-08HM (slot I)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Site:</b>	Corley Pad	<b>MD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Well:</b>	Corley N-08HM (slot I)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Jul2216dt_v14

**Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,916.00	20.17	10.01	5,763.59	1,095.15	168.61	14,437,965.50	1,707,163.35	39.75597785	-80.76250571
6,005.00	22.34	4.48	5,846.53	1,127.14	172.60	14,437,997.48	1,707,167.34	39.75606565	-80.76249121
6,087.00	22.97	4.20	5,922.21	1,158.63	174.99	14,438,028.97	1,707,169.73	39.75615213	-80.76248241
6,172.00	24.26	1.66	6,000.09	1,192.63	176.71	14,438,062.97	1,707,171.45	39.75624548	-80.76247597
6,261.00	29.54	354.98	6,079.45	1,232.80	175.32	14,438,103.14	1,707,170.06	39.75635581	-80.76248054
6,351.00	35.30	349.27	6,155.41	1,280.50	168.53	14,438,150.84	1,707,163.27	39.75648686	-80.76250425
6,441.00	41.63	342.67	6,225.87	1,334.66	154.76	14,438,205.00	1,707,149.50	39.75663571	-80.76255272
6,530.00	45.41	336.08	6,290.43	1,391.90	133.09	14,438,262.24	1,707,127.83	39.75679307	-80.76262930
6,620.00	47.96	330.11	6,352.20	1,450.21	103.42	14,438,320.55	1,707,098.16	39.75695341	-80.76273431
6,709.00	52.09	328.17	6,409.37	1,508.72	68.42	14,438,379.06	1,707,063.16	39.75711435	-80.76285831
6,799.00	59.03	325.80	6,460.24	1,570.88	27.95	14,438,441.22	1,707,022.69	39.75728536	-80.76300171
6,889.00	62.86	325.62	6,503.94	1,635.87	-16.36	14,438,506.21	1,706,978.37	39.75746415	-80.76315879
6,978.00	65.89	325.71	6,542.42	1,702.12	-61.62	14,438,572.46	1,706,933.12	39.75764644	-80.76331919
7,068.00	72.97	328.35	6,574.03	1,772.79	-107.40	14,438,643.13	1,706,887.33	39.75784083	-80.76348144
7,158.00	76.18	328.52	6,597.97	1,846.70	-152.81	14,438,717.04	1,706,841.93	39.75804415	-80.76364231
7,248.00	82.02	329.58	6,614.98	1,922.46	-198.24	14,438,792.80	1,706,796.50	39.75825254	-80.76380323
7,337.00	90.90	331.16	6,620.47	1,999.60	-242.10	14,438,869.94	1,706,752.63	39.75846470	-80.76395860
7,426.00	94.90	330.02	6,615.97	2,077.02	-285.74	14,438,947.36	1,706,709.00	39.75867762	-80.76411314
<b>Tie into original hole @ 7426 MD</b>									
7,515.00	89.67	336.17	6,612.41	2,156.26	-325.94	14,439,026.60	1,706,668.80	39.75889553	-80.76425544
7,605.00	89.63	338.10	6,612.96	2,239.18	-360.91	14,439,109.52	1,706,633.83	39.75912351	-80.76437909
7,694.00	91.12	335.20	6,612.38	2,320.88	-396.18	14,439,191.22	1,706,598.56	39.75934813	-80.76450383
7,784.00	90.46	332.48	6,611.14	2,401.64	-435.85	14,439,271.98	1,706,558.89	39.75957023	-80.76464424
7,873.00	90.33	329.05	6,610.53	2,479.29	-479.31	14,439,349.63	1,706,515.43	39.75978379	-80.76479815
7,963.00	90.95	329.40	6,609.52	2,556.61	-525.35	14,439,426.96	1,706,469.38	39.75999647	-80.76496128
8,052.00	90.86	329.93	6,608.12	2,633.42	-570.30	14,439,503.76	1,706,424.44	39.76020772	-80.76512049
8,142.00	89.27	329.05	6,608.01	2,710.95	-615.99	14,439,581.30	1,706,378.75	39.76042098	-80.76528235
8,232.00	88.62	328.17	6,609.67	2,787.77	-662.86	14,439,658.11	1,706,331.88	39.76063227	-80.76544841
8,321.00	89.27	328.44	6,611.31	2,863.48	-709.61	14,439,733.82	1,706,285.13	39.76084054	-80.76561406
8,411.00	87.69	328.88	6,613.70	2,940.32	-756.40	14,439,810.66	1,706,238.33	39.76105189	-80.76577985
8,500.00	88.88	328.52	6,616.36	3,016.33	-802.62	14,439,886.67	1,706,192.12	39.76126097	-80.76594360
8,590.00	89.71	328.52	6,617.47	3,093.08	-849.61	14,439,963.42	1,706,145.12	39.76147208	-80.76611011
8,680.00	91.03	328.88	6,616.89	3,169.98	-896.37	14,440,040.32	1,706,098.37	39.76168360	-80.76627576
8,769.00	91.69	330.46	6,614.77	3,246.77	-941.30	14,440,117.11	1,706,053.44	39.76189482	-80.76643493
8,859.00	90.37	331.16	6,613.16	3,325.33	-985.18	14,440,195.67	1,706,009.56	39.76211087	-80.76659036
8,948.00	90.90	331.42	6,612.17	3,403.38	-1,027.93	14,440,273.72	1,705,966.80	39.76232553	-80.76674176
9,038.00	89.98	332.22	6,611.48	3,482.71	-1,070.43	14,440,353.05	1,705,924.31	39.76254369	-80.76689226
9,127.00	90.11	331.86	6,611.41	3,561.32	-1,112.16	14,440,431.66	1,705,882.58	39.76275988	-80.76704002
9,217.00	90.68	332.22	6,610.79	3,640.81	-1,154.36	14,440,511.15	1,705,840.38	39.76297849	-80.76718944
9,307.00	89.36	331.25	6,610.76	3,720.08	-1,196.97	14,440,590.42	1,705,797.76	39.76319648	-80.76734036
9,396.00	89.85	331.69	6,611.37	3,798.27	-1,239.48	14,440,668.61	1,705,755.26	39.76341152	-80.76749090
9,486.00	90.59	331.69	6,611.03	3,877.50	-1,282.16	14,440,747.84	1,705,712.58	39.76362942	-80.76764205
9,575.00	88.13	330.81	6,612.02	3,955.52	-1,324.96	14,440,825.86	1,705,669.77	39.76384398	-80.76779364
9,665.00	88.84	329.40	6,614.40	4,033.52	-1,369.80	14,440,903.86	1,705,624.93	39.76405850	-80.76795248
9,754.00	89.41	329.23	6,615.76	4,110.04	-1,415.22	14,440,980.39	1,705,579.52	39.76426899	-80.76811338
9,844.00	90.42	330.11	6,615.89	4,187.72	-1,460.66	14,441,058.07	1,705,534.07	39.76448265	-80.76827439
9,934.00	91.60	330.46	6,614.31	4,265.88	-1,505.27	14,441,136.22	1,705,489.47	39.76469759	-80.76843240
10,023.00	90.68	328.00	6,612.53	4,342.33	-1,550.79	14,441,212.67	1,705,443.95	39.76490787	-80.76859368
10,113.00	91.65	328.52	6,610.70	4,418.85	-1,598.12	14,441,289.19	1,705,396.62	39.76511835	-80.76876142
10,203.00	90.46	328.08	6,609.05	4,495.41	-1,645.40	14,441,365.75	1,705,349.33	39.76532894	-80.76892898
10,292.00	88.40	327.38	6,609.93	4,570.65	-1,692.92	14,441,440.99	1,705,301.82	39.76553592	-80.76909737
10,382.00	88.88	327.65	6,612.07	4,646.55	-1,741.24	14,441,516.89	1,705,253.50	39.76574470	-80.76926864
10,471.00	89.19	327.03	6,613.57	4,721.46	-1,789.26	14,441,591.81	1,705,205.47	39.76595078	-80.76943884
10,561.00	88.57	329.14	6,615.33	4,797.84	-1,836.83	14,441,668.18	1,705,157.91	39.76616086	-80.76960742
10,651.00	91.21	329.05	6,615.50	4,875.06	-1,883.05	14,441,745.40	1,705,111.69	39.76637324	-80.76977120



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Corley N-08HM (slot I)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Site:</b>	Corley Pad	<b>MD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Well:</b>	Corley N-08HM (slot I)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Jul2216dt_v14

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,740.00	90.11	328.61	6,614.47	4,951.20	-1,929.11	14,441,821.54	1,705,065.62	39.76658268	-80.76993442
10,830.00	90.99	330.28	6,613.61	5,028.70	-1,974.86	14,441,899.04	1,705,019.88	39.76679583	-80.77009651
10,920.00	91.96	330.19	6,611.29	5,106.80	-2,019.53	14,441,977.14	1,704,975.21	39.76701063	-80.77025475
11,009.00	90.55	329.58	6,609.34	5,183.76	-2,064.17	14,442,054.10	1,704,930.57	39.76722231	-80.77041292
11,099.00	90.29	331.51	6,608.68	5,262.12	-2,108.42	14,442,132.46	1,704,886.32	39.76743783	-80.77056968
11,188.00	89.98	333.09	6,608.48	5,340.92	-2,149.79	14,442,211.26	1,704,844.95	39.76765452	-80.77071619
11,278.00	90.07	333.01	6,608.44	5,421.15	-2,190.58	14,442,291.49	1,704,804.16	39.76787513	-80.77086062
11,368.00	91.38	333.62	6,607.30	5,501.55	-2,230.99	14,442,371.89	1,704,763.74	39.76809623	-80.77100370
11,457.00	90.24	332.83	6,606.04	5,581.00	-2,271.08	14,442,451.34	1,704,723.65	39.76831469	-80.77114565
11,547.00	90.33	330.63	6,605.59	5,660.26	-2,313.71	14,442,530.60	1,704,681.03	39.76853266	-80.77129661
11,637.00	88.53	328.88	6,606.49	5,738.00	-2,359.03	14,442,608.34	1,704,635.70	39.76874647	-80.77145721
11,727.00	88.62	328.88	6,608.72	5,815.02	-2,405.53	14,442,685.36	1,704,589.20	39.76895833	-80.77162200
11,816.00	90.42	328.44	6,609.47	5,891.03	-2,451.82	14,442,761.37	1,704,542.92	39.76916739	-80.77178603
11,906.00	90.68	328.00	6,608.61	5,967.53	-2,499.22	14,442,837.87	1,704,495.52	39.76937782	-80.77195402
11,996.00	91.43	328.26	6,606.95	6,043.95	-2,546.73	14,442,914.29	1,704,448.01	39.76958802	-80.77212241
12,085.00	88.53	328.08	6,606.98	6,119.56	-2,593.66	14,442,989.90	1,704,401.08	39.76979599	-80.77228875
12,175.00	88.70	328.17	6,609.16	6,195.97	-2,641.17	14,443,066.31	1,704,353.56	39.77000616	-80.77245715
12,264.00	89.49	328.17	6,610.56	6,271.57	-2,688.11	14,443,141.91	1,704,306.63	39.77021412	-80.77262349
12,354.00	88.66	331.16	6,612.01	6,349.23	-2,733.55	14,443,219.57	1,704,261.19	39.77042771	-80.77278452
12,444.00	89.76	332.22	6,613.26	6,428.46	-2,776.23	14,443,298.80	1,704,218.51	39.77064558	-80.77293568
12,533.00	91.91	331.60	6,611.96	6,506.96	-2,818.12	14,443,377.30	1,704,176.61	39.77086146	-80.77308409
12,623.00	92.79	331.42	6,608.27	6,585.99	-2,861.02	14,443,456.33	1,704,133.72	39.77107881	-80.77323603
12,712.00	91.87	328.70	6,604.65	6,663.04	-2,905.40	14,443,533.38	1,704,089.34	39.77129072	-80.77339327
12,802.00	90.86	329.49	6,602.51	6,740.24	-2,951.61	14,443,610.58	1,704,043.13	39.77150305	-80.77355704
12,892.00	91.69	330.02	6,600.50	6,817.97	-2,996.93	14,443,688.31	1,703,997.81	39.77171683	-80.77371764
12,981.00	89.45	327.38	6,599.62	6,894.00	-3,043.16	14,443,764.34	1,703,951.58	39.77192595	-80.77388148
13,071.00	90.15	327.73	6,599.93	6,969.95	-3,091.44	14,443,840.29	1,703,903.30	39.77213487	-80.77405263
13,161.00	91.08	328.08	6,598.97	7,046.19	-3,139.26	14,443,916.53	1,703,855.48	39.77234458	-80.77422212
13,250.00	89.67	327.73	6,598.38	7,121.59	-3,186.54	14,443,991.93	1,703,808.19	39.77255196	-80.77438973
13,340.00	90.20	328.17	6,598.49	7,197.87	-3,234.30	14,444,068.21	1,703,760.43	39.77276178	-80.77455902
13,429.00	91.16	328.96	6,597.43	7,273.80	-3,280.71	14,444,144.14	1,703,714.02	39.77297063	-80.77472352
13,519.00	90.02	328.61	6,596.50	7,350.76	-3,327.35	14,444,221.11	1,703,667.38	39.77318232	-80.77488882
13,608.00	91.08	328.96	6,595.65	7,426.87	-3,373.47	14,444,297.22	1,703,621.26	39.77339166	-80.77505229
13,698.00	89.19	327.91	6,595.44	7,503.55	-3,420.58	14,444,373.90	1,703,574.15	39.77360257	-80.77521927
13,788.00	89.76	328.17	6,596.26	7,579.91	-3,468.22	14,444,450.25	1,703,526.52	39.77381258	-80.77538813
13,877.00	89.85	328.17	6,596.56	7,655.52	-3,515.16	14,444,525.87	1,703,479.58	39.77402057	-80.77555451
13,967.00	90.46	328.17	6,596.32	7,731.99	-3,562.63	14,444,602.33	1,703,432.11	39.77423089	-80.77572276
14,056.00	91.03	327.91	6,595.16	7,807.49	-3,609.73	14,444,677.83	1,703,385.01	39.77443856	-80.77588974
14,146.00	91.74	328.00	6,592.99	7,883.76	-3,657.47	14,444,754.10	1,703,337.27	39.77464833	-80.77605897
14,235.00	92.26	327.82	6,589.88	7,959.11	-3,704.72	14,444,829.45	1,703,290.02	39.77485561	-80.77622647
<b>Survey @ 14235.00 MD 6589.88 TVD</b>									
14,283.00	92.26	327.82	6,587.99	7,999.71	-3,730.27	14,444,870.05	1,703,264.47	39.77496727	-80.77631702
<b>Survey projected to 14283.00 MD 6587.99 TVD</b>									

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Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,426.00	6,615.97	2,077.02	-285.74	Tie into original hole @ 7426 MD
14,235.00	6,589.88	7,959.11	-3,704.72	Survey @ 14235.00 MD 6589.88 TVD
14,283.00	6,587.99	7,999.71	-3,730.27	Survey projected to 14283.00 MD 6587.99 TVD

JUN 10 2020

WV Department of Environmental Protection

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Corley N-08HM (slot I)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Site:</b>	Corley Pad	<b>MD Reference:</b>	RKB=1254+28 @ 1282.00usft (Precision 110)
<b>Well:</b>	Corley N-08HM (slot I)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Jul2216dt_v14

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